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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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08/936,510 09/24/97 KIM

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EXAMINER

MMC2/0710

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| ART UNIT | PAPER NUMBER |
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DATE MAILED:

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

|                              |                 |                |
|------------------------------|-----------------|----------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s)   |
|                              | 08/936,510      | KIM, YONG BEOM |
| Examiner                     | Art Unit        |                |
| Tarifur R Chowdhury          | 2871            |                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 July 2001.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3,4 and 6-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4 and 6-39 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 24 September 1997 is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- 15) Notice of References Cited (PTO-892)      18) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)      19) Notice of Informal Patent Application (PTO-152)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.      20) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 02, 2001 has been entered.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawing must show every feature of the invention specified in the claims. Therefore, the convex portions must be shown as described in the specification or the feature(s) canceled from the claim(s). No new matter should be entered.

### ***Claim Objections***

3. Claim 6 is objected to because of the following informalities: Claim 6 depends on the canceled claim 5. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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5. **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by**

**Nakamura et al., (hereinafter Nakamura), PN 5,684,551.**

6. Nakamura shows in figure 1, a reflective-type liquid crystal display device comprising:

- first and second substrates (2, 3);
- a reflective electrode (7) over the first substrate (2), the reflective electrode having an opaque metal and being a surface with convex portions (col 9, line 58);
- a liquid crystal layer between the first and second substrates;
- an uniaxial optical compensation film (14) over the second substrate (3);
- a first alignment layer (9) over the first substrate (2); and
- a second alignment layer (11) over the second substrate.

Accordingly, claim 1 is anticipated.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura as applied to claim 1 above.**

9. The claimed method for manufacturing a reflective-type liquid crystal display device would have been obvious in view of the device of claim 1.

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10. **Claims 1, 3, 4 and 6-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al., PN 5,757,455 in view of Toko, PN 5,793,459, Izumi, PN 5,754,267, Lu et al., PN 5,870,164, Shirai, PN 4,405,208, and Kanbe et al., PN 5,500,750.**

11. Sugiyama et al., disclose a liquid crystal display in figure 10, comprising a first and second substrates; a liquid crystal layer between the first and second substrates (column 1, lines 66-67; column 2, lines 1-2); at least one uniaxial optical compensation film (48 or 49) which can be either negative or positive type formed over the substrate (column 9, lines 51-59); a first alignment film with a plurality of first alignment direction, where at least two of the plurality of first alignment directions are either perpendicular or parallel to one another (figure 6G), formed on the first substrates and a second alignment film with an alignment direction perpendicular to the first alignment direction formed on the second substrate (column 2, lines 5-13). Sugiyama et al., also disclose a method of manufacturing such device including a method of forming the alignment layer including rubbing or exposing number of times in accordance with the number of the alignment directions to polarize ultraviolet rays to form the alignment directions (column 4, lines 28-49, column 5, lines 26-28).

12. Sugiyama et al., disclose all the limitations above claims except for the liquid crystal display device being a reflective type with a reflective electrode formed over the first substrate and exposing the alignment layer to non polarized ultraviolet light to form the alignment directions and the reflective electrode made of an opaque metal and has a surface with convex portions.

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13. Toko disclose a method of manufacturing a liquid crystal display device including rubbing or exposing to polarized light or non-polarized light to form the alignment direction (column 4, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to expose the alignment layer to polarized or non-polarized light to form the alignment direction of the alignment layer of the display device disclosed by Sugiyama et al., since both exposing to the polarized and non-polarized light cause the same effect, forming the alignment direction as described by Toko.

14. Also, it is notoriously well known to one of ordinary skill in the art that a liquid crystal display device can be made either a transmissive type by forming a pixel electrode made of a transparent conductive film such as ITO or a reflective type by forming a pixel electrode made of a reflective conductive film such as Al. See Izumi, PN 5,754,267, Lu et al., PN 5,870,164, Shirai, PN 4,405,208. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to convert the display of Sugiyama et al., to the reflective type display device by replacing the pixel electrode (12b) formed on the first substrate with a reflective electrode.

15. Kanabe et al., disclose the reflective electrode has an opaque (i.e., non light transmissive) metal and a surface with convex portions (column 9, lines 20-65) to improve the reflective characteristics (column 2, line 41) and improve the display quality (column 3, line 23). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a reflective electrode having an opaque metal and

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a surface with convex portions, as taught by Kanabe et al., in the device of the combination of Sugiyama et al., and Toko.

***Response to Arguments***

16. Applicant's arguments filed on July 02, 2001 have been fully considered but they are not persuasive.

17. In response to applicant's argument that none of the cited references, singly or combined, teaches or suggests the claimed feature such as reflective type display with reflective electrode and at least one uniaxial optical compensation film, it is respectfully pointed out to applicant that as described in the office action the cited references in combination in fact discloses the claimed limitations.

***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

TRC  
July 9, 2001



William L. Sikes  
Supervisory Patent Examiner  
Technology Center 2800